HYDREX®

UNDERWATER TECHNOLOGY

NEWS

LETTER | 252

Wherever, whenever

Contents

Swift on-site bow thruster operations

The Hydrex lightweight flexible mobdocks are designed to be easily transported around the world and are used to close off the thruster tunnel on both sides, allowing divers to perform repairs and other operations in a dry environment around the bow thruster unit.

This technique enables them to reinstall the propeller blades of an overhauled thruster inside the thruster tunnel after the unit has been secured or replace the blades or seals and perform repair work on a specific part without removing the unit.

Since the development of this flexible mobdock technique, numerous thruster repairs have been carried out by Hydrex diver/technicians around the world.

There is no need to send the vessel to drydock as all operations can be carried out in port or while the vessel is stationary at sea. Normal commercial activities can therefore continue without disruption.

Hydrex wins Energy Globe Award 2017

On 27 November 2017 a delegate from the Austrian Chamber of Commerce at the Austrian embassy in Brussels, Mrs. Martina Madeo, visited Hydrex nv in Antwerp to present the company with the National Energy Globe Award for 2017. Hydrex won the award for Belgium for its Propeller Buffing project. Hydrex CEO Boud Van Rompay accepted the award on behalf of the company.

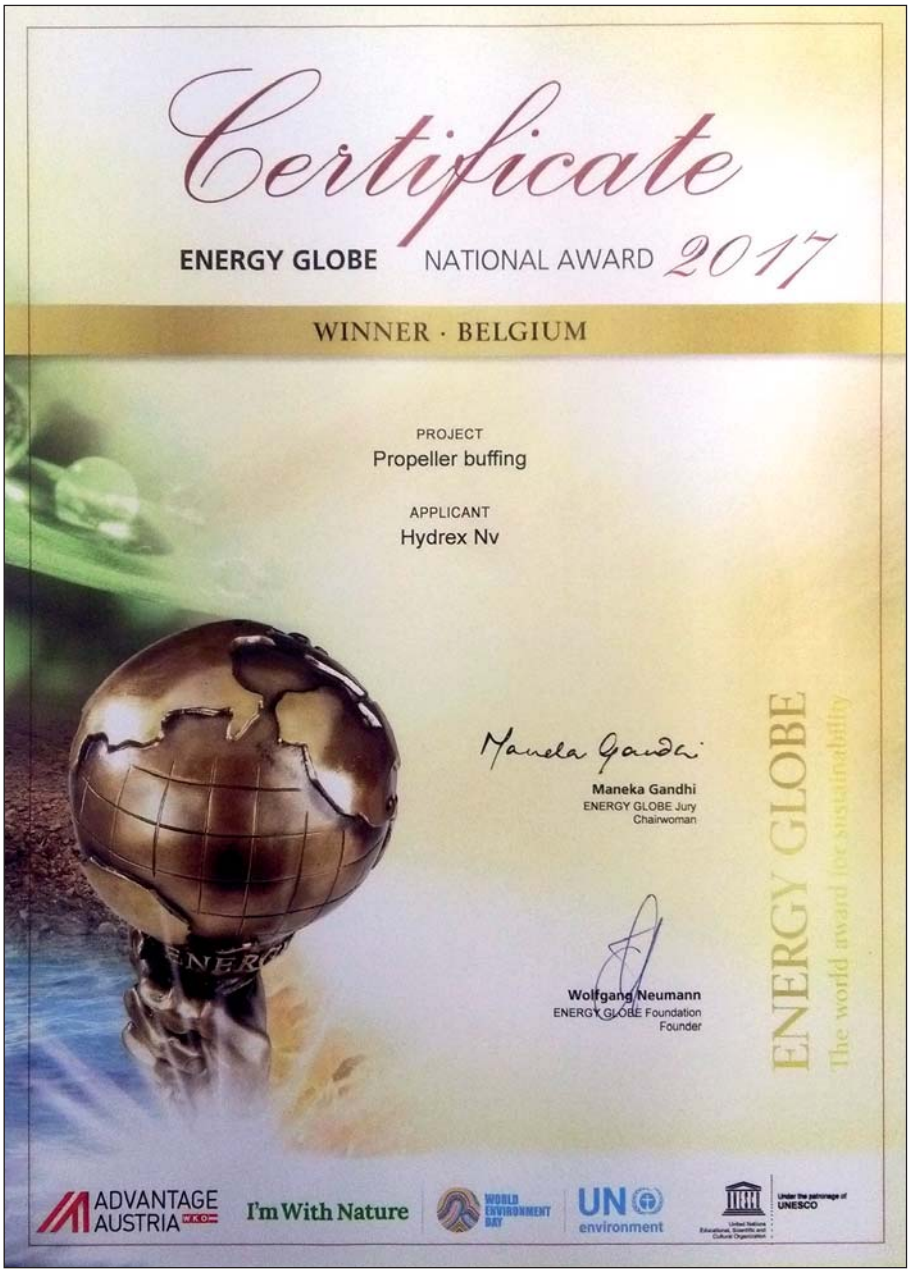
According to the jury report, “conventional propeller maintenance methods cause roughness which has several ecological and economical aspects. A rough propeller consumes more fuel and pollutes the sea when polished. This year's National Winner of the Energy Globe Award in Belgium developed a method which saves fuel and reduces water pollution.”

Hydrex CEO Boud Van Rompay receiving the award from Mrs. Martina Madeo, delegate from the Austrian Chamber of Commerce.

Boud Van Rompay explaining how Hydrex plans to implement the project on a large scale.

"It is our duty and responsibility to assure that our young people will have an intact environment tomorrow." With these words Wolfgang Neumann launched the ENERGY GLOBE World Award for Sustainability in 1999, today’s most prominent and prestigious environmental prize.

From all over the world, projects are showcased that conserve and protect our resources or that employ renewable energy. The goal is to present



successful sustainable projects to a broad audience, for many of our environmental problems already have good, feasible solutions. More than 2.000 projects and initiatives from a total of 178 countries were submitted for this year's award.

Below you can read a summary of the winning project:

Initial situation

The traditional approach in the propeller maintenance industry is to polish it with a grinding disk which can be quite damaging to the propeller. By the very fact of using a grinding disk, a substantial amount of metal is removed from the propeller itself. This can alter the shape and efficiency, cause roughness and increase rather than reduce friction. This roughness has several ecological and economical aspects. A rough propeller can consume up to 10% of additional fuel. This is an economical problem, but also an ecological one because of the increased greenhouse gas emission. Then there is the aspect of the polluting particles dropping into the sediment, making it a source of marine pollution which is a problem in a number of ports.

Solution

Hydrex discovered that more frequent, lighter cleaning of the propeller using a different tool to a grinding disk, and catching the propeller before a calcareous layer builds up is actually the optimum approach to propeller cleaning. If done right and done regularly it can result in 5% or even more fuel savings. No material is ground away, which is good for the propeller and the environment.

Innovation

Until that breakthrough, there were no smooth propellers. For a ship that has a medium level of fuel consumption, the savings far outweigh the cost of the propeller cleaning itself. Because the propeller is being cleaned regularly any loss of material and hence increased roughness is prevented entirely.

Propeller buffing is by far the most environmentally safe propeller cleaning technique available today and this made the jury decide to give the Energy Globe Award for 2017 to Hydrex for this project. ■

If you have received this magazine at the wrong address or if your company is going to move, please let us know.

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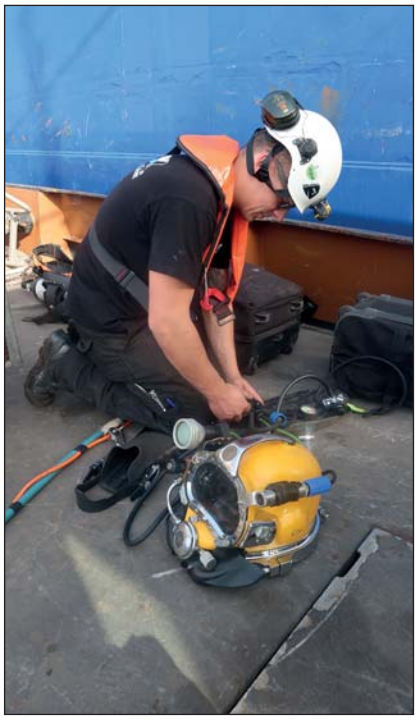
No drydocking needed thanks to underwater stern tube seal repair in Antwerp

Last month one of our diver/technician teams carried out an underwater stern tube seal repair on a tanker berthed in Antwerp. The ship was suffering from an oil leak, making an on-site repair necessary. Using a Hydrex flexible mobdock the team was able to carry out the entire operation on-site and underwater, saving the owner an expensive and time-consuming trip to drydock.

We have developed a flexible mobdock repair method that enables the underwater replacement of all types and sizes of shaft seals. It allows ship owners to keep their vessel sailing, saving precious time and money.

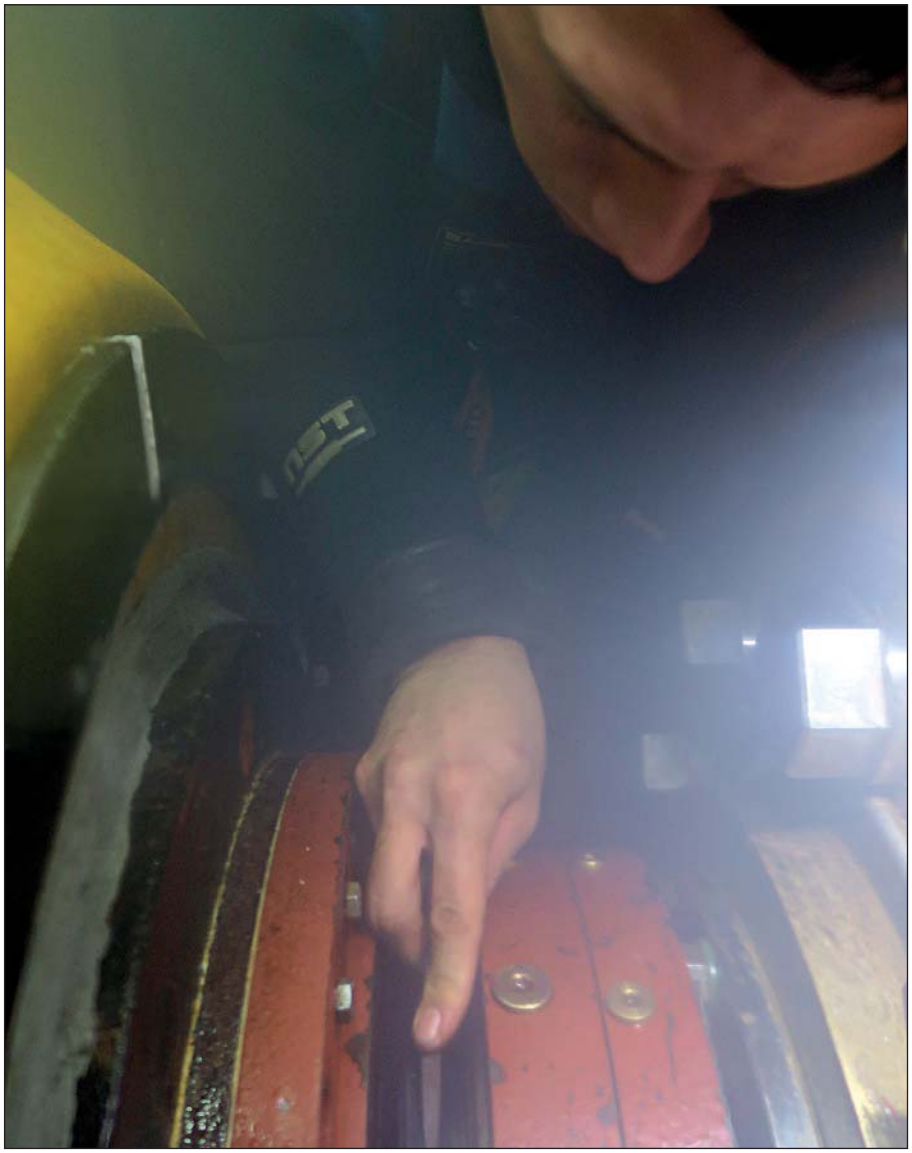
Hydrex diver working inside the flexible mobdock.



All diving equipment is checked prior to any underwater operation.

Hydrex vans and equipment next to tanker in Antwerp.

Diver getting ready to take the plunge.



Diver/technician working on the stern tube seals.

Damaged stern tube seals will cause oil leaks or an ingress of water. By replacing the seals as soon as possible we can keep the down time low. Because seal repairs can be performed during cargo operations the ship can keep its schedule.

It is not always straightforward to replace seals. There can be quite a bit of variation in the size of the stern tube itself and for instance the liners can be worn down and show ruts. However, all this is routinely handled by our experienced teams.

All our offices are equipped with the latest facilities, lightweight equipment and tools. This allows for a timely arrival of our teams on any location around the world with everything they need to successfully complete the job.

Below you can find a short summary of a recent stern tube seal repair.

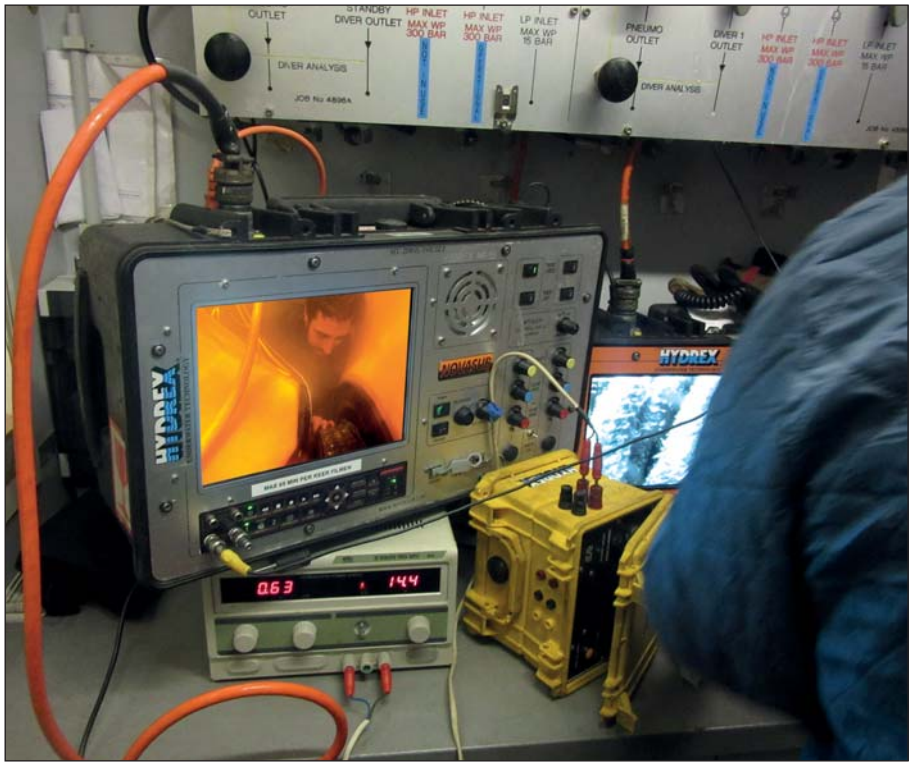
The same high quality, close to home or faraway

Despite the vessel's location close to our headquarters in Antwerp our well stocked fast response center nevertheless saved the owner a costly and unwelcome trip to drydock.

Once the operation was approved all preparations were handled swiftly and the lightweight equipment was mobilized almost immediately. Our team was on-site and ready to start the seal replacement when the vessel arrived in Antwerp.

The operation started with a thorough underwater inspection of the stern tube seal assembly. It was revealed that a rope and a fishing net were entangled around it. Both were removed by our divers and the flexible mobdock was installed to allow for work in dry conditions.

The rope guard was reinstalled after the replacement.



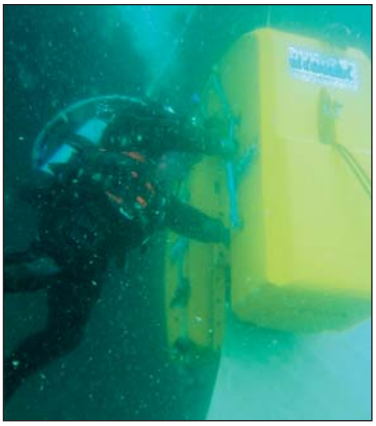
The operation was supervised from inside one of our monitoring stations.

During the operation our divers removed the three damaged seals and replaced them with new ones. Working together with the OEM allowed us to provide our customer with original spare parts which guarantees the best quality material. A technician of the seal manufacturer was also present during the operation.

Conclusion

Taking advantage of the Hydrex flexible mobdock technique the team was able to carry out the entire

Fast underwater propeller blade straightening



In its quest to provide cost effective services to customers, Hydrex developed procedures to address different kinds of damage to propellers. This research led to the design of the Hydrex cold straightening machines first used in 2002.

By taking advantage of this technique damaged blades can be straightened underwater, allowing the ship to return to commercial operations without the need to drydock. Blades can be brought back close to their original form, restoring the propeller's optimum efficiency.

The cold straightening machines have been in use for quite some time now but the Hydrex research department has been looking into ways to expand the technique even further to improve our services. A new version of the straightening machine was recently put into practice. It is compatible with the existing models and is used to restore more severely bent propeller blades to their original condition.

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Stern tube assembly after the seal replacement.

repair on-site and underwater. Because all the required material is ready to be transported at all times, no time is lost making preparations.

By organizing everything from start to finish the owner did not have to worry about making any arrangements for the repair. After the seals had been successfully replaced he could sail his vessel to her next stop free of oil leaks. ■

Permanent in-water rudder repairs now possible without drydocking

Hydrex has developed an entirely new method enabling permanent repairs of rudders without drydocking the ship. Permanent repairs were hitherto not possible and ships had to drydock in case a major defect was found. The newly designed equipment is light-weight and can be mobilized very rapidly in our special flight containers. Therefore this new service is now available world-wide.

Major defects on rudders very often cause unscheduled drydocking of ships. The new method designed by our technical department allows engineers, welders and inspectors to perform their tasks in dry conditions. Class approved permanent repairs on-site, without moving the ship, are now possible and commercial operations can continue. Steel repairs and replacements can be performed and pintle and bushing defects can be solved without the loss of time and money associated with drydocking.

The equipment can be mobilized within hours to any port in the world and is available for rapid mobilization from the Hydrex headquarters in Antwerp.

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Underwater propeller cone fin installation offers immediate fuel savings

Over the last few months Hydrex installed propeller cone fins on several general cargo vessels. We can carry out these operations all over the world.

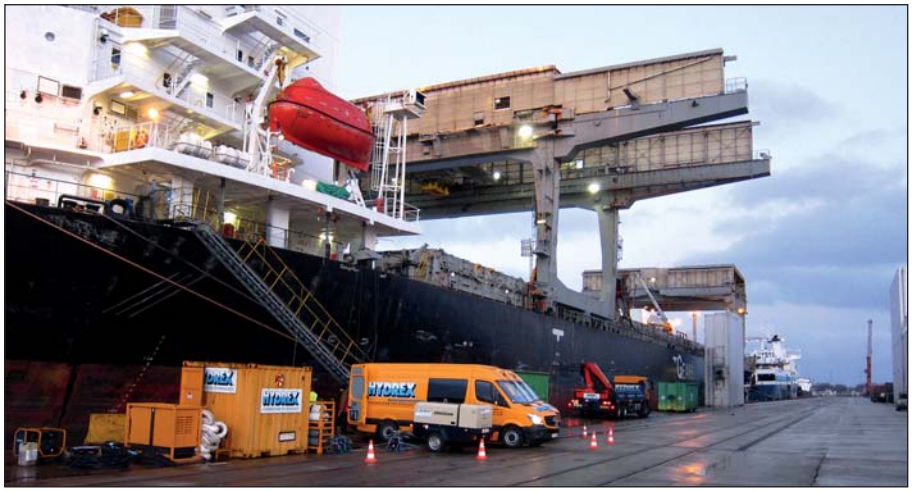
A direct result of this underwater operation is that an owner can instantly start benefitting from the fuel savings a propeller cone fin brings. He does not have to wait until the next scheduled drydocking for the installation.

Propeller caps like these can recover energy loss of a propeller hub vortex in the propeller's slipstream. This decreases fuel consumption from 3% up to 5% according to the manufacturers and reduces cavitation on rudders and hulls. Hydrex can install propeller cone fins underwater on any size and make of propeller, on both new build or in-service vessels.

Installation afloat prevents a long wait for fuel savings.

Hydrex carries out these operations following the specific procedures required by the involved OEM, adapted for an underwater installation .

After a preliminary inspection the divers remove the propeller cap and clean the flange where the device is to be installed. They then lower the propeller cone into the water and position it on the propeller. The bolts are put on the correct torque and secured. Hydrex teams can work in shifts around the clock to finish the



Hydrex trucks and equipment during propeller cone fin installation.

Handling the new propeller cap prior to installation.

Hydrex underwater inspections

Underwater inspections are an essential aspect of ship repairs. Building upon conventional technical skills and know-how while also taking advantage of the latest technology, Hydrex offers a unique hull monitoring service to its customers. This gives ship owners total control of the underwater hull and the underwater gear of their vessels. An informed decision can then be made concerning any required follow-up action. Catching problems early can save you much money in the long run.

Hydrex diver/technicians can carry out inspections underwater and on-site very swiftly without disturbing the vessel's sailing schedule.

With fuel costs amounting to 40% of operational expenses and continuing to rise, reducing fuel consumption is a vital concern of ship owners. This is the reason why hull monitoring pays for itself. Underwater hull roughness, marine fouling, bent propellers and poor paint condition are all factors that will increase fuel usage due to the drag or inefficiency created by the damaged or affected area. The data gathered can then be used to see if actions are required.

Our diver/technicians are trained for a wide range of operations and they can carry out the inspections in port or at anchor anywhere in the world.

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Propeller cone fin ready for installation.

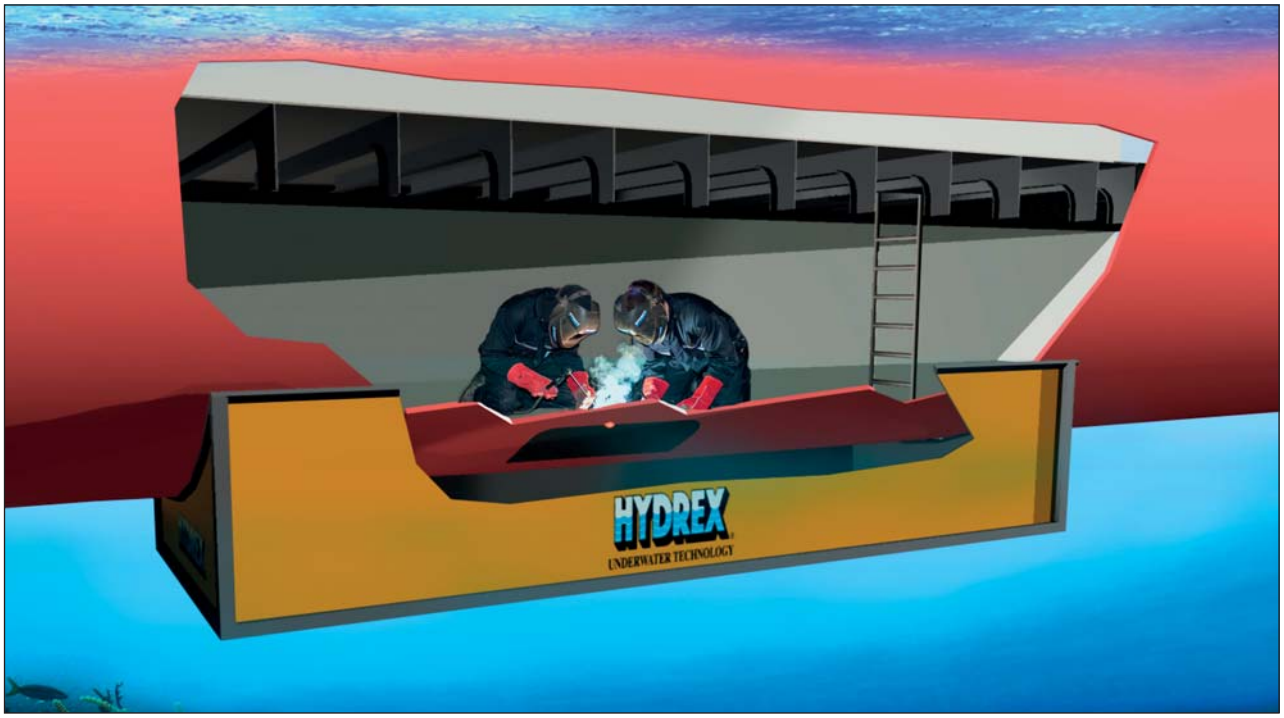
Diver getting ready for underwater operation.

Old propeller cap being lifted from the water.

operation as quickly as possible.

The owner of the vessel can start enjoying the fuel savings the propulsion improving device creates right away. Not having to wait for the next scheduled drydocking to have the propeller cone fin installed can win him up to four years of fuel savings. In contrast, he will have earned back the cost of the underwater installation in only a few months. The savings are considerable. ■

Hydrex hull repairs save time and money



Hydrex on-site hull repair services include the renewal of both small and large areas of damaged hull plating. These repairs can be carried out above or below water, according to the circumstances, with tailor-made cofferdams. Normal commercial activities can therefore continue without disruption. These operations follow the Hydrex procedure for welding cracks in the vessel's shell plating and they are approved by all major classification societies.

Hydrex diver/technician teams carry out these on-site hull repairs all over the world. In most cases the damaged area can be replaced with a permanent insert and no condition of class is imposed. On the rare occasions where the damage does not allow such a repair, a temporary doubler plate is installed over the affected area. This allows the owners to keep to their schedule and have a permanent repair carried out during the next scheduled drydock visit.

To offer the fastest possible service to customers, Hydrex offices have fast response centers where an extensive range of state-of-the-art tools and diving support equipment is available at all times for the repair teams to mobilize to your location.

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Keeping ships in business

Hydrex offers turnkey underwater repair solutions to shipowners wherever and whenever they are needed. Hydrex's multidisciplinary team will help you find the best solution for any problem encountered with your ship below the water line. We will immediately mobilize our diver/technicians to carry out necessary repair work without the need to drydock.

Hydrex has a long track record of performing complex permanent underwater repairs to thrusters, propellers, rudders, stern tube seals and damaged or corroded hulls. By creating drydock-like conditions around the affected area, our diver/technicians can carry out these operations in port or at anchor.

All the projects we undertake are engineered and carried out in close cooperation with the customer and any third party suppliers, relieving the customer of all the hassle of coordination, planning and supervision.

Headquartered in the Belgian port of Antwerp, we have offices in Rotterdam, Tampa (U.S.A) and Algeciras (Spain).

All Hydrex offices have fully operational fast response centers where an extensive range of state-of-the-art equipment is available at all times.

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